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BITTER CARP (*Rhodeus amarus*)  
FROM NEW YORK STATE WATERS

One of the recent additions to the fish collection of the Roosevelt Wild Life Station of the New York State College of Forestry is very interesting in that it contains four specimens of *Rhodeus amarus*. These were obtained in a general collection of fishes from the Sawmill River near Tarrytown, N. Y., made on September 16, 1923. The specimens average about 2 1-2 inches in length.

It seems probable that considerable numbers inhabit this stream and are breeding successfully as my specimens were taken from a small area with a few dips of a common 4 x 6 minnow seine.

Identification was made through Mr. John T. Nichols of the American Museum of Natural History and Dr. W. C. Kendall of the Roosevelt Station. The former suggested this species and kindly sent aquarium specimens for comparison.

W. A. DENCE

Roosevelt Wild Life Forest Experiment Station,  
Syracuse, N. Y.

## THE DISTRIBUTION OF THE LAMPREY *Ichthyomyzon unicolor*

In a recent review<sup>1</sup> of the lampreys the distribution of *Ichthyomyzon unicolor* is given as the "Great Lakes basin". This statement was based largely on larval or ammocoete material. Since this larval material cannot as yet be unquestionably distinguished from that of the other species of this genus (*I. concolor*) a precise statement of the distribution of this species rests on the records of adult specimens.

Adults of this species can be collected only for a very short period of time in late spring at which time they are abundant. They do not feed as adults and according to Dr. Okkelberg<sup>2</sup> they have a larval period of seven years in northern Michigan. Adults are not usually taken in general surveys but it is relatively easy to determine the presence or absence of the larvae living in the alluvial deposits along the streams.

Larvae of the genus *Ichthyomyzon* are characterised by the continuous dorsal fin. Larvae of *I. unicolor* taken from Mill Creek, Dexter, Michigan, usually reach a size of over 120 mm. before they transform and are much compressed laterally while adult *I. concolor* may be much less than 120 mm. in length and are rounded in form. It is therefore probable that *I. concolor* larvae transform at a much smaller size. Small adult *I. concolor* are cylindrical and some of the *Ichthyomyzon* larvae have this shape. It is therefore quite certain that the *Ichthyomyzon* larvae which are 120 mm. or over in length and are compressed laterally are *I. unicolor*. Small larvae can not be determined for certain at the present time.

During the summer of 1923 adults were taken at three additional localities, all in the Au Sable River system, Michigan. This brings the known localities

<sup>1</sup>Creaser and Hubbs, Occ. pap. Mus. Zool., Univ., Mich. No. 120, 1922.

<sup>2</sup>Occ. pap. Mus. Zool., Univ., Mich. No. 125, 1922.

up to six. Only one, that of Mill Creek, Dexter, Michigan has been published in such a way as to link it with this species. The adults have been collected at the following places.

1. Mill Creek, Huron River basin, Dexter, Michigan. Numerous specimens including the type of *Ichthyomyzon fossor* Reighard and Cummins<sup>3</sup>.

2. Galien River, Berrien County, Michigan. One specimen collected by T. L. Hankinson and recorded<sup>4</sup> as "*Ichthyomyzon* sp."

3. Red Cedar River, Grand River basin, East Lansing, Mich. Six specimens collected by Prof. C. Conger.

4. Au Sable River, Five Channels, Michigan. Three specimens collected by C. W. Creaser. Two of these were from the stomachs of a rock bass (*Ambloplites rupestris*) and a pike (*Esox lucius*).

5. East Branch of the Au Sable River, Grayling hatchery, Grayling, Michigan. One specimen collected by C. L. Hobbs and J. Metzelaar.

6. East Branch of the Au Sable River above Jones Lake, Crawford County, Michigan. Ten adults collected by C. L. Hubbs and J. Metzelaar.

All of these localities are within the drainage area of the southern peninsula of Michigan.

Dr. Pratt has labeled figure 10 of his "Manual of the Vertebrates of the United States"<sup>5</sup> as this species. The figure is in fact of *Petromyzon marinus*.

The records of the occurrence of the large larvae, determined on the characters listed above, are more numerous. They may be listed as follows.

1. As pointed out in the review referred to above it is highly probable that the specimens named *Ammocoetes unicolor* by De Kay<sup>6</sup> from a tributary to Lake Champlain and

<sup>3</sup>Occ. pap. Mus. Zool., Univ., Mich. No. 31, 1916.

<sup>4</sup>Occ. pap. Mus. Zool., Univ., Mich. No. 89, 1922.

<sup>5</sup>Page 25, P. Blackiston's Sons and Co., 1923.

<sup>6</sup>New York Fauna, Fishes, 1842, p. 383, pl. 79, fig. 250

2. *Ammocoetes borealis* by Agassiz<sup>7</sup> from a stream flowing into Lake Superior were larvae of this species.

3. Thunder Bay River, four miles southeast of Atlanta, Montmorency County, Michigan. A large series constituting the material of Dr. Okkelberg's paper referred to above and collected by C. L. Hubbs and C. W. Creaser.

4. Rifle River, nine miles northeast of Prescott, Ogemau County, Michigan. A series collected by C. L. Hubbs and C. W. Creaser.

5. Saline River at York, Washtenaw County, Michigan. Six specimens collected by C. L. Hubbs.

6. Mill Creek, Dexter, Michigan. Numerous collections by various collectors.

7. Huron River, Ann Arbor, Michigan. One collected by H. Cummins.

8. White Pigeon River, White Pigeon, Michigan. Several specimens collected by Prof. A. S. Pearse.

9. The lowest mile of the North Branch of the Au Sable River, Crawford County, Michigan. A series collected by C. L. Hubbs and J. Metzelaar.

10. An ammocoete from the St. Lawrence drainage at Madrid, New York. Courtesy of the United States National Museum.

All of the material referred to except the last listed is deposited in the Museum of Zoology, University of Michigan, the officials of which have kindly permitted this publication pertaining to their lamprey collection.

These records of the adults and of the probable larvae constitute our present knowledge of the distribution of this little known lamprey. It may be broadly stated as the "Great Lakes basin".

CHARLES W. CREASER

*College of the City of Detroit.*

<sup>7</sup>Lake Superior, 1850, p. 252

## SUBDIVISIONS OF THE GENUS

### *Raja* LINNAEUS

The genus *Raja* (or *Raia*), of Linnaeus, as accepted by recent authors, covers obviously a larger range of forms than is the case of genera of fishes generally. Several attempts have been made to subdivide it, or rather to detach individual species, but these efforts have not met with general acceptance. In recent papers in the Journal of Morphology, Mr. W. Harold Leigh-Sharpe of London, has published a series of valuable studies of the "Comparative Morphology of the Secondary Sexual characters of the Elasmobranch Fishes." In the seventh of these memoirs (Vol. XXXIX Journal of Morphology, pp. 567-573), he takes up the reproductive structures of the genus *Raia*, which group he divides, on the basis of differences in the claspers, into nine groups to which he gives the new appellation of "pseudogenera," framing for each a new name by prefixing a Greek letter to the Latin word *Raia*. The question naturally arises as to whether these terms should be recognized in nomenclature as having the rank of subgenera, which they are in fact. It seems to the present writer that they must be so acknowledged and I may forestall discussion by accepting them as regularly proposed subgenera, the type of each being specially indicated by the original author. The pseudogenera or subgenera in question are the following:

*Alpharaia*, page 586, type *Raia circularis* Couch.

*Betaraia*, p. 568, type *Raia clavata* L.

Species examined: *clavata*, *blanda*, *maderensis* Lowe, *maculata* Montagu and *microcellata* Montagu. The genus *Hieroptera* Fleming (1841) is based on an abnormal individual of *Raia clavata* and is earlier than *Betaraia*, and should be accepted in preference if the group is maintained.

Two other species, *Raia fullonica* L. and *Raia rhina* Jordan and Gilbert, are regarded as transitional, approaching *Gammaraia*. Another species, *Raia un-*

*dulata* Lacipded is placed here provisionally. *Raia fullonica* is the type of the genus *Amblyraja* of Malm (1877) which is earlier than *Betaraia* but must give way to *Hieroptera*, is placed in the same group.

*Gammaraia*, p. 572; type *Raia batis* L. With this are placed four species, *nidrosiensis*, *inornata* Jordan and Gilbert, and *lintea* Fries. *Raia batis* is the accepted type of *Raja* itself, and the names *Dipturus*, *Cephaleutherus*, *Platopterus*, *Propterygia* and *Rajabatis*, are accepted as synonyms. To this last *Gammaraia* must be added. *Raja batis* is usually regarded as the type of *Raja* although Bonaparte, has regarded *Raja minaletus* L. as type.

*Deltaraia*, p. 574, type *Raia radiata* Donovan, *R. naevus* M. & H, being a second species, both from Northern Europe. *Leucoraja* Malm is based also on *Raia radiata*, and has priority over *Deltaraia*.

*Epsilonraia*, p. 574, type *Raia platana* Günther, *R. cyclophora* Regan being a second species, both being South American.

*Zetaraia*, p. 575; type *Raia brachyura* Günther, from Straits of Magellan.

*Etaraia*, p. 576; type *Raia murrayi* Günther from Kerguelen.

*Thetaraia*, p. 577; type *Raia eatoni* Günther from Kerguelen.

*Iotaria*, p. 577; type *Raia marginata* Lacepede, a species of Northern Europe.

Before these names can be adopted, a much larger series of species should be examined. The name *Betaraia* should give place to *Hieroptera*, that of *Gammaraia* to *Raja* and *Deltaraia* to *Leucoraja*. Other synonyms to be considered are *Batis* Bonaparte based on *Raia radula* Delaroche, the earlier name *Dasybatus* Blainville (1830) being later accepted by Bonaparte instead. *Laeviraja* Bonaparte (1838) based

on *Raja oxyhynchus* L., *Uraptera* Muller and Henle (1838) based on *Raja agassizi* M. & H. of Brazil and *Malacorhina* Garman (1877) based on *Raja mira* Garman, a soft-bodied deep-sea form.

DAVID STARR JORDAN

#### NOTE ON *SERRANUS ZONATUS* VALENCIENNES

In turning to the description in Hist. Nat. Poiss., 6, 1830, p. 383, based on an example from Mauritius. I was struck with the evident resemblance to *Serranus brighami* Seale, described in Occas, Pap. Bishop Mus., 1, No. 4, 1901, p. 7, fig. 3, from Honolulu. To my mind there is no question but what they are the same species. It is curious that both were described as *Serranids*, whereas they are perhaps more correctly to be retained in the *lutjanid* genus *Apsilus*, rather than the later *Rooseveltia*. The species then becomes *Apsilus zonatus* (Valenciennes), with *Rooseveltia aloha* Jordan and Snyder as another synonym.

HENRY W. FOWLER

*Academy of Natural Sciences*  
*Philadelphia*

#### NOTE ON *PROPOMA ROSEUM* GUNTHER

Gunther originally placed this in his family *Pristipomatidae*. I have been unable to refer it there as the maxillary is clearly free from the suborbital, according to the original figure. An examination of the types of *Rhyacanthias carlsmithi* Jordan, recently described from Hawaii, shows little to contend its distinction from *Propoma roseum*. *Rhyacanthias* is said to have palatine teeth, though I fail to find them. However, a few are present on the vomer. From Gunther's

remarks on *Propoma* it appears he likely thought both vomer and palatines edentulous. It would then follow that *Propoma roseum* should be referred to the *Anthinae* in the *Serranidae*. The distribution of *Propoma roseum* is from the East Indies to Hawaii.

HENRY W. FOWLER

*Academy of Natural Sciences*  
*Philadelphia*

#### A POSSIBLE MANNER OF SNAKE DISTRIBUTION

While on a collecting trip to Sanibel Island, Florida, in the summer of 1921, the following incident was related to me by Mr. W. J. Matthews, a hotel owner on the island.

A large floating island some twenty feet in diameter, composed mainly of water hyacinth, drifted on Sanibel during the spring of that year. He investigated the "island" and found a large rattle snake (? *Crotalus adamanteus* Beauvois) which he killed. This floating island was one of many that were deposited on Sanibel during the spring floods of the Caloosahatchee River. Sanibel is located about two miles from the main land, the southern portion of the island opposite the mouth of the river. This particular floating island was carried at least five miles around the southern point of Sanibel and deposited on the ocean side. The trip made by the snake must have been at least twenty-seven miles as the water hyacinth does not occur in the river below Fort Myers, so far as I could note.

W. J. CLENCH



